

REMARKS

Claim 46 remains in this application.

Claims 45 stands rejected under 35 U.S.C. 102(b) as being unpatentable over Gifford et al. '834. This rejection is respectfully traversed for the following reasons, as it might be applied to new claim 46.

The problem solved by the inventor has been to realize a rewindable flexible film for preparing three-dimensional, dimensionally and structurally stable objects, in particular packages (disposable containers), which, as such said flexible, allows to obtain the package (usually a three-dimensional object) directly at the place of its final utilization (in particular at the place where the package is realized) thus enormously simplifying the handling of the raw materials (starting film) and the handling within the manufacturing plants which permit traditional machinery to work with traditional production cycles.

In its essential outlines the invention relates to a film (a semi-manufactured bi-dimensional product), which is flexible and possesses all the typical characteristics of this kind of semi-manufactured product (windability on a reel, a limited requirement of space, easy to be transported and to run on traditional packaging machinery), but at the same time possesses another new characteristic essential to obtain the claimed aims such as to stiffen on command on the entire film surface and locally.

On command means that the rigidity is obtained through the external supply of energy in any desired stage during the production cycle of the package to be realized

(this may happen at the beginning before the package has reached its three-dimensional appearance, or during any intermediate stage when the package is about to assume its three-dimensional appearance, or during the final stage when the package has already reached, basically due to the contained product therein, its definitive three-dimensional appearance).

Locally means, that the rigidity does not concern the whole package, but only those parts which shall be stiffened in order to ensure the three-dimensional stability of the package. This allows that after use, when the package has to be eliminated, it may be curled up and may in particular reassume once again the characteristics (limited requirement of space) which got lost after its three-dimensional transformation.

Having thus clarified what the present invention aimed to reach and has reached, it is easy to recognize that the invention disclosed in the document US-A-3648884, which represents the closest prior art, not only aimed to obtain a different finality, but moreover, would not even have succeeded in obtaining the finalities which may be reached with the present invention.

In its essential outlines, the invention disclosed in US'884 relates to a film for realizing packages which adapt themselves to fit around the shape of the product to be contained and get rigid after having assumed the shape of the product (not assuming a proper shape), in order to protect it. To obtain this finality in Gifford et al. the starting material consists of a flexible film obtained by laminating together a layer of PVC with a plasticizer and a layer of PVDC.

The method for forming packages by using this film foresees the following steps:

- supercooling, with the function to maintain the PVDC at an amorphous state and in this way malleable since this material, at ambient temperature, is crystalline and rigid. During this stage it is necessary that the PVC is additivated with a plasticizer because otherwise it would break during the supercooling,
- covering of the product with the flexible film in order to form a package according to the shape of the product to be contained,
- heating for the crystallization of the PVDC and in this way obtaining a first stiffening of the package. This step of heating has no influence on the plasticized PVC. Its only function is to accelerate the crystallization of the PVDC which otherwise would require too much time,
- supplying high energy to the film to make it definitively rigid (reticulation of the polymerizable plasticizer).

So it is evident that the method Gifford et al. relates to:

- is not able to produce **rewindable** flexible film, being necessary that the film which comes out from the extruder plant has to be immediately utilized for the realization of packages,
- requires the use of a special, very complex and expensive production line for the realization of the package, with respect to common lines either for the production of packages and for the production of film,

- requires a stage of supercooling and heating for the production of the package,
- requires the use of an apparatus able to supply extremely high energy (machinery Van der Greaff, high tension, cobalt 60, X-ray etc),
- requires this high energy supply for the whole time necessary to make the package rigid,
- stiffens the complete package.
- is remarkably expensive.

With regards to the feature of new proposed claim 46:

rewindable

With this term it is to be intended a film, which may be also a multilayer film, which may contain also paper or metal components and which may be printed, may be rewound upon a reel from which it is unwound only at the moment at which the package shall be realized. In this manner it may be obtained a complete independence of the process of film forming from its use of package realization. Moreover a limited space requirement and low weight are obtained, thus facilitating transport and stock. Gifford et al. instead uses a material which necessarily has to be plasticized, has to undergo a stage of supercooling and has to be fit around the object to be packed, possibly laminated to another already polymerized film. Basically Gifford et al. uses a film for packing immediately after its realization.

inert with respect to said film

The substance to be associated to the film, being already structurally stable, is inert toward to this film and does not at all alterate its chemical constitution. In particular, this structurally transformable substance may be applied only in those regions to be involved by the stiffening. Gifford et al. instead introduces a plasticizer during the preparation process of the vinilchlorid resin and modifies in this manner the proper characteristics of the resin. The plasticizer forms with its molecules instable connections in order to make the resin flexible (col.2, line 64-67). Therefore, Gifford et al. discloses that the additive is added to the resin in order to increase its flexibility during the stage of supercooling which is necessary to slow down the crystallization of the PVDC barrier film. In this way the vitrification temperature of the PVC is decreased from ca 83°C to a value of -40°C, and in this way the film maintains its flexibility also during the low temperature water bath of between -1°C and 38°C and at least one passive activator therefor (with the term passive it is to be intended a substance which does in no way modify another one, apart from the moment when it is adequately activated with the supply of its specific energy, that starts up the structural transformation and makes then the material more rigid than before. Gifford et al. does not foresee the passive activator of a structurally transformable substance, teaching only about a plasticizer which, during a first stage, has the function to make the film flexible and, during a second one, has the function to work as a support to the crystallization of the PVDC to make rigid the obtained shape. The energy to be

supplied to the plasticizer is extremely high and may be obtained for example by a machinery Van der Graaff which requires complex and expensive equipments, reaching very high temperatures, often incompatible with the product inside the package. Apart from this, also the mechanism of stiffening is different in both cases: according to US'884 it is obtained in two different stages, and, more precisely, in a first step of crystallization of the PVDC which works automatically and cannot be controlled, and in a second step of polymerization of the plasticizer which requires extremely high energy. According to the present invention, only one step is foreseen with a minimum of energy supply, just enough to start up the process of structural transformation of the material from flexible to substantially rigid. This process continues by its own, having the passive activator the single function to start up the reaction. Finally, the energy supplied by Gifford et al. acts directly onto the substance to be polymerized, the polymerization of which has before been slowed down by the plasticizer and has then been accelerated by high energy. In the present invention instead the energy acts directly onto the activator, which then acts onto the substance to be polymerized).

when energized

Not being foreseen, according to Gifford et al., an activator, it is not foreseen an energy compatible with the activator. In Gifford et al. high amounts of energy are supplied to the whole material the film is formed of, to polymerize and reticulate the plasticizer. The present invention instead foresees an energy supply which on one

hand is just enough to start up the single reaction of rigidifying, and on the other hand is compatible only with the activator, and is not received by the film matrix with the risk to alterate it.

Accordingly, in view of the above amendments and remarks, reconsideration of the rejection and allowance of all of the claims of the present application are respectfully requested.

Conclusion

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Mr. Joseph A. Kolasch (Reg. No. 22,463) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Pursuant to the provisions of 37 C.F.R. §§ 1.17 and 1.136(a), the Applicant hereby petitions for an extension of three (3) months to July 2, 2003 the period in which to file a response to the Office Action dated January 2, 2003. A check for the required extension fee of \$930.00 is enclosed herewith.

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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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